Targeting Implementation
of Best Management Practices

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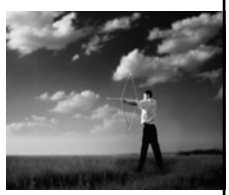
Introduction

- Purpose
- Models
- Targeting Subwatersheds
- Significance of Landcover
- Loads
- Targeting Practices
- Complimentary Funding Sources

Purpose of Targeting

- Prioritization of subwatersheds
- Biggest bang for the buck!
- Mechanism for voluntary recruitment
- Visual Display (maps) for communication purposes



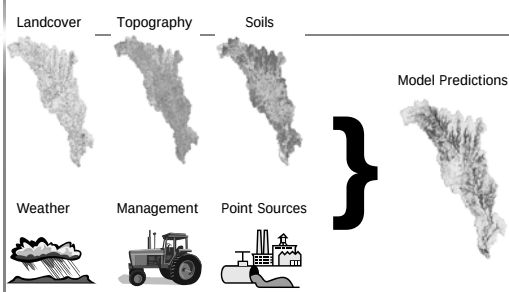
Water Quality Models

- A model is a mathematical representation of a real world process or system.
- Hydrologic models can simulate rainfall, runoff and the processes governing the transport of sediment and nutrients.
- Models can predict how changes within a basin will effect water quality.

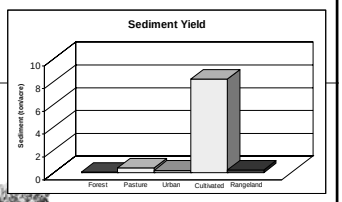
Soil and Water Assessment Tool (SWAT)

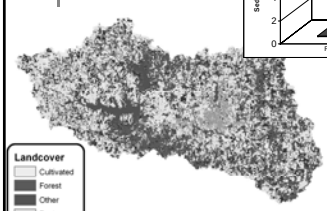
- SWAT is a river basin scale model developed to quantify the impact of land management practices in large, complex watersheds.
- GIS data (soils, topography, land use) are used to define the basin.
- SWAT is extensively peer reviewed and used internationally.
- Included in the release of EPA's BASINS 3.0.

SWAT Data Requirements

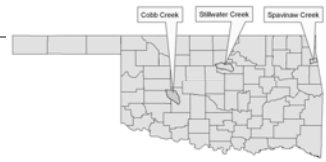


The Significance of Landcover





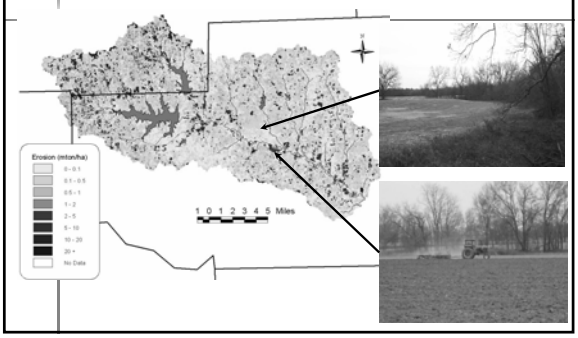
Targeting in Oklahoma



Cobb Creek | Stillwater Creek | Spavinaw Creek

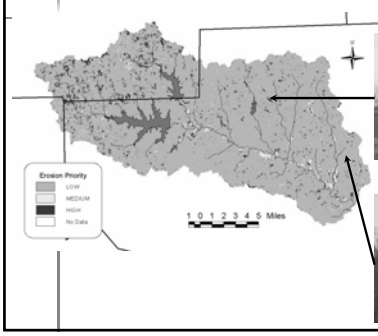
SWAT Predicted Erosion

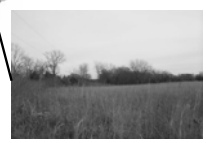
Stillwater Creek



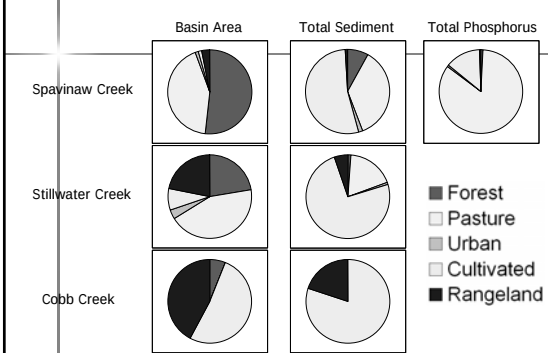
Targeting Map

Stillwater Creek

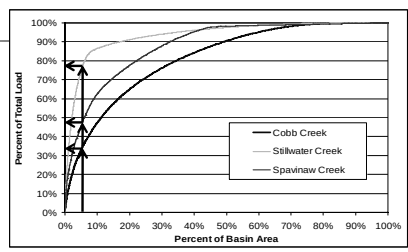




Disproportionate Loads



Targeting Optimal BMP Placement



	Basin Area (%)	Contribution (%)	Pollutant Load
Stillwater Creek	5	78	Sediment
Spavinaw Creek	5	47	Total Phosphorus
Cobb Creek	5	33	Sediment

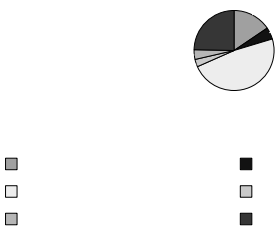
Targeting Types of BMPs

- Heatwole et al. (1987) developed a model to evaluate the cost-effectiveness of alternative best management practice (BMP) implementation schemes on two agricultural basins in Florida.
- Fifteen BMP scenarios were evaluated to aid in prioritizing BMPs for implementation in these basins.
- Applying the maximum level of BMPs was estimated to cost around $1.2 million (annually)
- Four most cost-effective BMPs would cost **25%**, yet provide approximately **90%** of the water quality improvement.

Beatty Creek Project Results

- **105 contracts written**
  83 in OK; 22 in AR
- $**1,559,250 invested in implementation**
  - State and Federal Funds $1,114,289
  - Cooperators share (29%) $444,961
- **Results:**
  - 31% reduction in Total P load
  - 14% reduction in Total P concentration
  - Removal of stream from 303(d) list for fecal coliform impairment

Implementation Funding Summary



CWA Section 319 Funding

- The Section 319 Grant program was established to provide funding for efforts to curb nonpoint source (NPS) pollution
- EPA provides funds to state and tribal agencies, which are then allocated via a competitive grant process to organizations to address current or potential NPS concerns.
- Funds may be used to demonstrate best management practices (BMPs), establish Total Maximum Daily Load (TMDL) for a watershed, or to restore impaired streams or other water resources

CWA Section 319 Funding

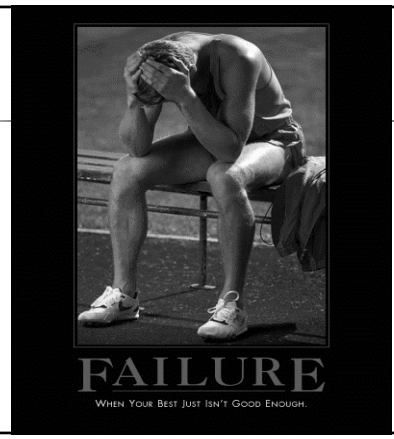
- Pollution from nonpoint sources (NPS) continues to be a major cause of water quality impairment throughout the United States.
- For decades, federal, state, and local agencies and nongovernmental partners have implemented a variety of technical and financial assistance programs intended to improve water quality by reducing NPS threats.
- NPS programs generally work through local agencies and organizations to encourage private landowners to adopt and maintain various land management practices that reduce NPS impacts and threats.

319 Success?

- NPS programs have had difficulty documenting clear linkages between project activities and measurable progress toward water quality goals.
- Historically, evaluation efforts have documented project administration, outreach and education efforts, cost-share agreements with landowners, installed management practices, anticipated load reductions associated with practices, and in some cases, data on water quality parameters.
- For most applications, traditional administrative reporting and water quality monitoring have not demonstrated water quality improvements.

319 Success?

- This perception was reinforced by a recent assessment of the Environmental Protection Agency's (USEPA's) NPS program administered through Section 319 of the Clean Water Act (the 319 Program).
- The assessment found that the 319 Program was not demonstrating results, primarily because it lacked clear efficiency measures, targets and baselines for measures, and regular, independent program reviews (EPA Region V Website).

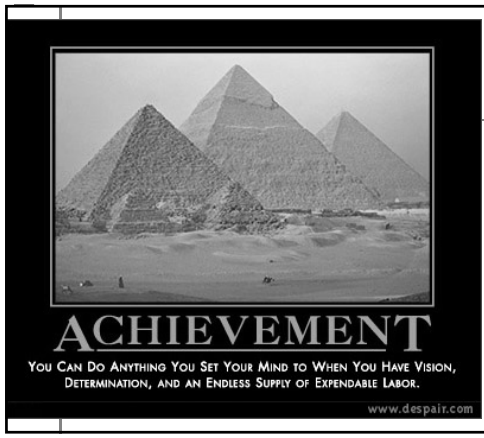


Other Reasons….

- These reasons include social factors, reality of realizing in-stream water quality improvements during 319 project life, etc.
- Is it possible that current funding for implementation is simply not enough to solve the problem in the absence of immediate social success in regards to universal and temporally-coincident adoption of BMPs?

Can't we all just get along???

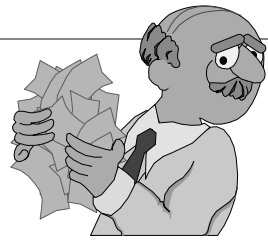
- SRF Funds – permanent easements
- NRCS/FSA – EQIP, CRP, CREP, WRP, WHIP, CSP, etc.
- States – Conservation Programs, Locally-led Program (state cost-share), Priority Watershed Program (state funding)
- Private - Nature Conservancy Funding (riparian work on preserve will match CREP), Power Company Carbon Credits (will buy trees to plant for carbon credits, can be used as match for CREP), Wetland Mitigation Banking, Lawsuit Settlements (KS funding CREP with lawsuit settlement), Poultry Integrator Funding- (gave OSRC $800K to be used for riparian work/streambank stabilization- will match CREP)



Conclusions

- Optimize BMP placement by targeting critical source areas
- Optimize use of limited funding by choosing only BMPs that provide highly effective water quality improvement
- Develop a basin specific water quality program at a level of effort that will show water quality improvement

Questions?



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